Material and Methods: Based on qualitative meta-synthesis as described by Sandelowski and Barroso four research articles were systematically identified and included in the study. Only studies conducted in the Scandinavian countries were included to ensure a similar cultural context and organization of the health care system. The meta-synthesis was conducted in a hermeneutic perspective, and consisted of five phases; *search phase, appraisal phase, classification phase, analysis phase* and *synthesis phase*. The synthesis phase was complemented by the approach *imported concepts* to expand comprehension and integrate the findings.

Results: The results suggest that the experience of radiotherapy is described by the main theme: *The importance of being greeted as a human being* and six sub-themes; *The role and competence of the RTT; Continuity and relationships; Isolation; High-tech environment; Active participation* and *Knowledge and guidance*.The main theme and sub-themes are illustrated in Figure 1.

Figure 1

The results are integrated with notions on care by Kari Martinsen with reference to the Danish philosopher Loegstrup, suggesting that the RTTs must be very aware of their role in the encounter with the individual; including being responsible for building trust and protecting the continuity in the relationship. The results suggest that structural issues in the health care system, such as efficacy and task prioritization, can jeopardize the relationship and communication between the RTT and the patient.

Conclusion: The results of the study provide evidence to work more actively with ensuring continuity during the radiotherapy trajectory to provide a higher level of care and communication with the individual patient. In addition, the study introduces an increased awareness amongst RTTs regarding their specific role in the patients' experiences of a radiotherapy trajectory.

PV-0225

Investigating optimal modality for boost treatment of left breast with deep inspiration breath hold

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Purpose or Objective: Deep inspiration breath hold (DIBH) for breast boost requires photons due to the limitations of the Varian RPM DIBH monitoring equipment, precluding the use of electrons. Traditionally, an electron boost was felt to be superior compared to photons due to their rapid dose fall off and resultant low dose to the heart and short treatment time. If an electron boost was deemed superior, this would need to be delivered with the patient free breathing (FB) due to aforementioned limitations. The primary aim of this study is to compare photons at DIBH to electron boost at FB with regards to plan quality and organ at risk (OAR) constraints to the heart and lungs in left sided breast patients. The secondary aim was to assess if the dosimetric detriment of the inferior modality would detract from the benefits gained in Phase 1, whole breast DIBH treatment.

Material and Methods: Twenty consecutive patients undergoing radiotherapy to the left breast with DIBH were identified. All patients underwent dual CT scans at DIBH and FB as per the standard departmental protocol. A boost treatment was retrospectively planned with electrons on the FB scan and photons on a DIBH scan to a prescription on 10Gy in 5 fractions. PTV coverage, mean and maximum, doses to the heart and left anterior descending artery (LAD) and mean doses to the lungs were compared. The results were further analysed by the location of the boost volume as defined by breast quadrants.

Results: Doses to the planning target volume (PTV) and mean heart doses were comparable between photons and electrons. Maximum heart doses reduced by 60% while maximum and mean LAD doses reduced by 54% and 51.2% respectively using photons, while mean left lung dose reduced by 43%. These reductions were seen across all four breast quadrants.
When combined with the reductions in doses seen using DIBH for Phase 1, whole breast treatment, electrons would result in an overall treatment dose increase of 11% for the heart maximum, 7.3% and 14% for LAD mean and maximum respectively and 70% for lung mean.

Conclusion: Dosimetrically photons was a superior modality when compared to electrons in phase 2 Left breast treatment maintaining benefits to the heart and lung gained through DIBH without compromising PTV coverage. The results were applicable regardless of the location of the boost volume. The increase in mean lung, maximum heart and maximum and mean LAD doses would negatively impact on the dosimetric benefit seen during DIBH for Phase 1 of left breast treatment.

PV-0226

Pattern of relapse of glioblastoma treated with Stupp protocol:could a margin reduction be proposed?

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Purpose or Objective: To analyse the pattern of recurrence and acute and late toxicity of 105 patients treated with Stupp protocol in relation to both radiotherapy technique (3D, IMRT and helical IMRT) and treatment volumes; to compare in silico plans with reduced GTV-CTV margin (1 cm) with the original ones (2 cm). The CTV-PTV margin (5 mm) was maintained.

Material and Methods: Relapse was considered as in field, marginal and distant if more than 80%, 20-80% or <20% of the relapse volume was included respectively in the 95% isodose. In silico plans with reduced margin were retrospectively re-calculated using exactly the same technique, the same fields angles and, if possible, the same TPS of the original plans. Statistical analysis was performed with SPSS® software.

Results: Eighty-five patients had local recurrence: 3 were excluded because underwent follow-up MRI in other hospitals; 14 because the original treatment plans were not recoverable. The analysis was therefore executed on 68 patients. They were in field, marginal and distant respectively in 88%, 10% and 2% of the cases. This pattern of

relapse was similar (pt student= ns) when the analysis was done on the in silico plans. The margins reduction appears to avoid the inclusion in the high dose volume of about 100 cc of healthy brain (p=0.02) (Table 1). The target coverage was significantly worse in original than in the in silico plans (pt student <0.001) (Table 1), especially if the tumour was close to organs at risk (px2 <0.001). PTV coverage of original plans was significantly better with IMRT and helical-IMRT when compared with 3D ones (pAnova test=0.038). This difference was no more statistically significant with in silico planning (pAnova test= n.s.). Higher incidence of asthenia and leuko-encephalopathy was observed in patients with greater percentage of healthy brain included in the 57 Gy isodose (pAnova test=0.038 and 0.034).

Table 1:
Comparison between really delivered plans (GTV-CTV margin=2cm) and *in silico* plans (GTC-CTV margin =1cm)

		GTV-CTV 2cm	GTV-CTV 1cm	p
Pattern of recurrence	In field	60 (88%)	55 (81%)	n.s.
	Marginal	7 (10%)	10 (15%)	
	Distant	1 (2%)	3 (4%)	
Organ at risk	Brain – PTV	Median (range)	Median (range)	0.023
	percentage	80% (50%-97%)	88% (69%-98%)	
	cc	1080 cc (580-1446cc)	1175 cc (850-1547 cc)	
	Brain - isodose 95% (57 Gy)	Median (range)	Median (range)	<0.001
	percentage	75% (35%-95%)	83% (53%-98%)	
	cc	1004 cc (407-1364 cc)	1105 cc (605-1487 cc)	

Conclusion: No differences in the pattern of recurrence according to the extent of margins have been found. The incidence of asthenia and leuko-encephalopaty varies with the percentage of healthy brain included in the high dose volume. The margin reduction allows significant sparing of healthy cerebral tissue and could possibly reduce the incidence of late toxicity. Margin reduction is compatible with appropriate target coverage, thereby limiting the need for more sophisticated and costly techniques to selected cases.

PV-0227

Radiotherapy in elderly patients with lung cancer. Performance status and fractionation analysis

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Purpose or Objective: Elderly patients with lung cancer are often referred to treatment with radiotherapy. Tolerance to treatment and survival may be determined by their age and performance status. Different fractionation schedules in these patients can also influence the results.
Our objective was to analyze survival in patients ≥70 years, depending on age groups, Karnofsky Status (KPS) and fractionation schemes.

Material and Methods: We analyzed 70 patients, aged ≥70 years, with diagnostic of lung tumors (T1-4; N1-3), with no previous surgery treatments, referred for external radiotherapy.
Total Dose range: 20-64Gy; fractionation schedules: 1.8-2Gy (considered standard, std), >2Gy (hypofractionation/stereotactic SBRT) Karnofsky Performance Status (KPS), was the tool to evaluate functional status the first day of treatment, and analysis was performed with two KPS groups: <70 vs ≥ 70

Results: Global survival: mean 9months (m); median 8 m.
12m survival: 22patients (31,4%)
18m survival: 8pts (11,4%)
>23m survival: 4pts (5,7%)
AGE:
70-79y: mean 9m; median 8 m
≥80y: mean: 9,2m; median: 8 m
KARNOFSKY PERFORMANCE STATUS (KPS)
Survival:
KPS <70: mean: 9,2m; median: 8
KPS ≥70: mean: 9m; median: 8
FRACTIONATION SCHEDULE:
standard fx: 29 pts mean:9.2m; median: 8
hypofractionation: 34pts mean: 8m; median: 7 m
only SBRT: 7pts mean: 9.7m; median: 8.5m
fractionation survival:
≥6months: std: 20 pts (67%) hypofx: 19 (56%)
≥12m: std: 11pts (38%) hypofx: 9pts (26.4%)
≥18m: std: 5 pts (17.2%) hypofx: 2 pts (0,6%)

Conclusion: In elderly patients the most advanced age (> 80 years) does not determine differences in survival after radiotherapy treatment.
There are no differences in survival of elderly patients according to the KPS (<70 vs ≥70)
Survival is very similar regardless of the fractionation scheme used (mean 9.2 vs 8 months). However, 6, 12 and 18 months survival is greater in patients with standard fractionation We can conclude that in elderly patients, the variables age, KPS or fractionation scheme does not determine significant differences in survival.
Hypofractionation techniques or SBRT should be considered as an alternative in frail elderly patients to avoid prolonged treatment in time. The analysis of other parameters such as tumor stage or additional chemotherapy could also discriminate populations with different prognostic.

PV-0228

Size and impact of intra-fractional changes in baseline shift during lung SBRT

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Purpose or Objective: A baseline shift can be defined as a shift of the target volume relative to its surrounding organs at risk (OAR). The baseline shift varies from day to day and can potentially lead to an overdosage of the OARs. In our clinic, the magnitude of the baseline shift is measured at the start of treatment in patients treated for solitary lung cancer. In case an OAR moves towards the target and the baseline shift exceeds the PRV margin, treatment is prevented. Limited data is available about the intra-fractional change of the baseline shift. The aim of this study is to determine if an intra-fractional change of the baseline shift necessitates multiple measurements to ensure safe delivery of SBRT.

Material and Methods: In this study a retrospective analysis was performed using the data of 87 patients, treated for lung cancer with SBRT in the period January 2010 to February 2014. Patients were treated according to one of three protocols: 3x18Gy (n=19), 5x11Gy (n=47), or 8x7.5Gy (n=21). Treatment delivery was performed using multiple (> 9) non-coplanar conformal beams or VMAT using 2 arcs. A planning risk volume (PRV) margin of 10mm was used standard around OARs (e.g. the heart and spinal cord). Smaller PRV margins, with a minimum of 3mm, were used in case prescriptions/constraints could not be met during planning.
Conebeam-CT scans were performed at the beginning, halfway, and at the end of each treatment fraction. Grey-value registrations of Conebeam-CT scans with Planning-CT scan were performed for both the target and the patient specific most critical OAR . The difference between the registrations is the baseline shift. The number of times the